REMARKS

Applicants respectfully request reconsideration of both rejections in view of the foregoing amendment and following remarks. Applicants have amended claims 1 and 5 in order to provide proper antecedent basis for the limitation of claim 5 within claim 1 (from which it depends). Moreover, support for this amendment is found in claim 5 and the paragraph spanning pages 10-11 of the specification. No new matter has been added. Acceptance of the foregoing amendment is respectfully requested. Claims 1-13 and 23-28 are pending.

Interview Summary

Applicants thank the Examiner for taking the time to conduct a telephone interview on Tuesday 18 December 2007. During the interview, three items were discussed. Agreement was reached with regard to the first two items but not the third item.

a. The amendment provided herein was first presented to the Examiner during the interview. The amendment provides for antecedent basis for the limitations in dependent claim 5. Although no rejection under 35 U.S.C. §112, second paragraph was made, such a rejection could have been made and applicants would have corrected the claims to put them in a final form for allowance. The Examiner agreed to allow entry of the amendment for the reasons stated.

b. The rejection under 35 U.S.C.§102 was also discussed and the Examiner recognized the area calculation and agreed that this rejection can be withdrawn.

c. The last rejection, under 35 U.S.C.§103 was also discussed and the interview proved valuable in better defining the issue to be addressed. While, the Examiner did not agree to withdraw this rejection, he did define the rejection as one where there is allegedly a suggestion to "modify" electrode size to affect performance. The undersigned attorney for applicants indicated that the Examiner, at best, established an obvious to try standard but did not provide any reference within Josse et al. as to where there is a suggestion of what can be considered a reasonable expectation of success. Subsequent to the interview[1], applicants informed the undersigned attorney for applicants that a person of ordinary skill in the art would have been motivated to enlarge the size or area of the first electrode to improve sensitivity by having a larger surface area for mass binding. However, the claimed invention provides for a much small electrode size than was used in the art with a key upper area limitation in claim 1. Therefore, the claimed invention provides a surprising result of enhancing sensitivity with a smaller electrode size. Moreover, Josse et al. teaches away from the claimed invention by not stating anything with regard to making electrode sizes smaller, only what a person of ordinary skill in the art would know to make electrode sizes larger to increase sensitivity. Accordingly, applicants respectively request to

[1] It should be noted that this Response is being submitted three days following the interview.

opportunity to submit evidence of this surprising result to be considered of record herein. The reason for this request is that the interview was the first instance wherein the Examiner clarified this rejection to allege that Josse et al. provides somewhere (the Examiner alleged) that there is a reasonable expectation of success to change electrode size but not to make electrodes smaller in size.

35 U.S.C.§102 Rejection

Claims 1, 2, 4, 8-10, 23 and 24 were rejected under 35 U.S.C. §102 as anticipated by Larue (U.S. Patent 5,705,399). The Examiner has responded to the prior Office Action response by asserting in Figure A on page 3 of the Office Action that the first electrode of Larue that is disk-shaped has a radius of 2.5 mm and an area (A_{fe}) of 6.25 mm^2. The Examiner's entire rejection is based on that assertion that an area of 6.25 mm^2 is within the claim 1 limitation of "said first crystal surface comprises a first electrode having a surface area of less than 15 mm^2."

Applicant respectfully requests that the Examiner reconsider this calculation. Wikipedia states: "The area enclosed by a circle is the radius squared, multiplied by π. $A = r^2 \cdot \pi$"[2] While the radius squared of a radius of 2.5 mm is indeed 6.25mm^2, the Examiner appears to have forgotten to multiply by pi (π) or about 3.1416. When one properly calculates the area (that is, multiplies the radius squared by pi), the answer comes out to 19.635 mm^2. This is greater than the claim limitation of less than 15 mm^2.

Accordingly, in view of a correct calculation of area of the Larue "first electrode", it clearly falls outside the scope of claim 1. Therefore Larue does not anticipate claims 1, 2, 4, 8-10, 23 and 24 of the present invention. Withdrawal of this rejection is respectfully requested.

35 U.S.C.§103 Rejection

Claims 1-5 and 8-10 and 25-28 were rejected as unpatentable under 35 U.S.C. §103 over Josse et al. (U.S. Patent 5,852,229). The issues raised by the Examiner are, in order raised: (1) whether the preamble of claim 1 acts as a limitation to be considered in determining the scope of the claimed invention in relation to Josse et al.; (2) whether Josse et al. discloses or suggests the claimed limitation of the area of the first electrode; (3) whether the prior restriction requirement that rendered withdrawn claims 6, 7 and 11-13 require that the Examiner consider differences in geometry over the prior to be patentably distinct, as is provided in the restriction requirement imposed by the Examiner in this case; and (4) whether the Examiner has established only an obvious to try standard in this rejection but did not establish a required reasonable expectation of success..

[2] http://en.wikipedia.org/wiki/Circle

1. The preamble is used as a limitation. Applicants argued previously that the preamble of claim 1 ("A thickness shear mode piezoelectric resonator for use in a sensor arrangement for detecting or measuring an analyte in a medium by mass changes") is used as a limitation that must be considered in determining the patentability of claim 1 in relation to Josse et al., a reference that has noting to do with mass changes measurements. The Examiner instead alleges that "the Josse et al. reference clearly teaches and discloses that the Prior Art teaches (see Prior Art Figures 1 and 2 and Figs 1-6) that many other similar applications for precision resonators has been devised. That is, the addition or subtraction of mass in the region of vibration of the piezoelectric material results in a change in the resonant frequency of vibration." The Examiner then again points to col. 2 lines 14-25 of Josse et al. Applicants respectfully disagree (1) with this characterization of Josse et al. and (2) that the preamble can be ignored when considering the scope of the claimed invention.

Firstly, the only section the Examiner cites for the proposition of Josse et al. teaching mass resonance is col. 2 lines 14-25. That is not correct. There is no such disclosure in Josse et al. relating to mass changes. In fact, the word "mass" could not be found in the entire Josse et al. disclosure[3]. Could the Examiner be confusing Josse et al. with the background section of the present specification? In the specification, page 2 lines 14-25 (roughly) discloses prior art mass sensors and the improvements (improved sensitivity) made by the key geometric limitations of the present invention. Accordingly, Josse et al. does not disclose or suggest any mass change sensor devices, irrespective of the geometry of the electrodes.

Secondly, applicants have indicated that the preamble of claim 1 is to be used as a limitation. However, the Examiner has given it "little or no patentable weight." However, a preamble is limiting where "it recites essential structure or steps, or where it is necessary to give 'life, meaning and vitality' to the claims." *Intirtool, Ltd. v. Texar Corp.*, 369 F.3d 1289, 1295 (Fed. Cir. 2004). As applicants have indicated, the *Intirtool* standard applies here and the claim preamble is supposed to be considered as a claim limitation because "it is necessary to give 'life, meaning and vitality' to the claims."

The Examiner further alleges that the "'structure' of the device claimed by Josse et al meets the limitations of instant claim 1, and is arguably capable of meeting the functional limitations recited in the preamble." However, the Examiner has not considered the key improvement over the art in the claimed invention, namely the geometric limitation ("said first crystal surface comprises a first electrode having a surface area of less than 15 mm^2"). Josse et al. does not disclose nor does Josse et al. suggest such a required geometric limitation (see issue #2 below).

[3] The undersigned conducted a word search for "mass" in the Adobe pdf file of Josse et al.

Accordingly, when considering the correct scope of the claimed invention, including the preamble, and when looking at what Josse et al. actually discloses, including those sections cited by the Examiner, the record herein shows that Josse eat al. does not disclose the claimed invention and does not suggest the claimed invention.

The Examiner also cites the recent Supreme Court *KSR* decision (550 U.S. at ___, 82 USPQ3d at 1397). However, the *KSR* precedent does not apply here because this Section 103 rejection is over a single reference, Josse et al., not a combination of references. Therefore, the KSR standard does not rescue a rejection that fails to meet its *prima facie* burden.

2. On page 5 of the Final Office Action (item #3), the Examiner alleges that "one of ordinary skill in the art is well aware of variations of the sizes and shapes of electrodes effect resulting frequency responses (i.e., resonance) in predictable ways, as disclosed/taught by Josse et al., and would be motivated to try different sizes and shapes to adjust the response (i.e., sensitivity) to selected analytes, or other types of fluid properties, as indicated by Josse et al. (Josse et al.: col. 2 lines 14-25)." The Examiner has drawn a conclusion as to what Josse et al. teaches with regard to the geometry claim limitations and points to a section in Josse et al. (col. 2 lines 14-25) that has nothing to do with mass sensors, electrode shapes and sizes or anything at all to do with the subject matter of the claimed invention. How can the Examiner draw such conclusions with no support in the reference cited (Josse et al.)? Moreover, the Examiner bases this conclusion on the assumption that changing geometry of the electrodes is predictable and not a patentable distinction (see item #3 below). Accordingly, there is no support in the Josse et al. reference to suggest that geometry ration would affect mass balance analysis when Josse et al. does not teach or suggest mass balance analysis in the first place. Accordingly, applicants respectfully request withdrawal of this rejection.

3. It should be noted that the restriction requirement in the file history is the Action dated 16 November 2006 (Confirmation No. 7354). In the restriction requirement, the Examiner asserted (page 3): "This application contains claims directed to the following **patentably distinct species**: Figures 1-4 (claims 1-5, 8-10 and 23-28); Figure 4 (claims 6 and 7), Figure 5 (claims 11-13)." (emphasis added). Of the three groups of patentably distinct species, the Examiner has withdrawn from consideration the second two groups (claims 6, 7 and 11-13), thus confirming that the Examiner considers geometric differences to be patentably distinct from each other. Therefore, the Examiner cannot now state that all geometries are predictable and not patentably distinct from each other when the file history contains just the opposite assertion. Accordingly, the Examiner's admissions in the restriction requirement completely subvert and are diametrically the opposite of the current unsupported conclusory statements contained in the Final Office Action. In view of the file history and particularly the restriction requirement (that the Examiner has made final) the present rejection of claims 1-5 and 8-10 and 25-28 must be withdrawn.

4. During the interview, the undersigned attorney for applicants indicated that the Examiner, at best, established an obvious to try standard but did not provide any reference within Josse et al. as to where there is a suggestion of what can be considered a reasonable expectation of success. However, a person of ordinary skill in the art would have been motivated to enlarge the size or area of the first electrode to improve sensitivity by having a larger surface area for mass binding. However, the claimed invention provides for a much small electrode size than was used in the art with a key upper area limitation in claim 1. Therefore, the claimed invention provides a surprising result of enhancing sensitivity with a smaller electrode size. Moreover, Josse et al. teaches away from the claimed invention by not stating anything with regard to making electrode sizes smaller, only what a person of ordinary skill in the art would know to make electrode sizes larger to increase sensitivity.

In view of the foregoing remarks, applicant respectfully requests withdrawal of the two rejections and allowance of claims 1-13 and 23-28.

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